



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,154	03/25/2004	Michele M. Meyer-Fredholm	SP03-038	7399
22928	7590	06/27/2006	EXAMINER	
			RAO, G NAGESH	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 06/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/809,154	MEYER-FREDHOLM ET AL.
	Examiner G. Nagesh Rao	Art Unit 1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-17 is/are rejected.
- 7) Claim(s) 4-6 and 16 is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: ____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date: ____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: ____ . |

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 1) Claims 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Independent claim 1 recites the limitation that the thermally-gradient at a point in the thermally-graded zone where the crystal is formed does not exceed 5 °C/cm, whereas rejected claim 4 recites the limitation that an effective axial temperature gradient in the thermally-graded zone does not exceed 10 °C/cm. Claim 4 fails to further limit claim 1 and appears to offer a contradiction, where the gradient as written in claim 1 does not exceed 5 °C/cm but then proceeds to further define said limit in claim 4 by increasing it to 10 °C/cm, therefore allowing for the possibility of the range be greater than 5 °C/cm which would not further limit claim 1 properly. Applicant is advised to amend and clarify the distinction of claim's 4 definiteness with respect to claim 1. Claims 5 and 6 depending on claim 4 are rejected for being dependent on a 112 rejected claim and thus incorporating the indefinite language of claim 4.

Claim Objections

2) Claims 4-6 and 16 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. As mentioned above claims 4-6 are rejected under 112 2nd paragraph but also objected to as failing to further limit claim 1 for the same reasons above.

Claim 16 is objected too for failing to limit the process by claiming and defining the structure of the apparatus utilized in the process. Rather than defining the process utilized.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- 3) Claims 1-15 and 17 are rejected under 35 U.S.C. 103(a) as being obvious over Garibin (US PG Pub 2002/0185057).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35

U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Garibin 057 pertains to a process for growing optical fluoride monocrystals. Wherein the method as prescribed in Garibin's specification follows as translating a crucible containing a molten crystal raw material from a crystallization zone through a thermally-graded zone into a second zone being an annealing zone for cooling the molten material down, and controlling the temperature at a point in the thermally-graded zone where the crystal is formed within a 8-12 °C/cm where it is taught that these processes occur in a commonly referred Stockbarger-Bridgeman apparatus and process (See Sections 0003-0006, 0010, 0011, 0015, 0019).

Garibin 057 further teaches that the zones are generally separated into 2 zones where there is a temprature controller regulating zone temperature separately as well insulating means for the zones, and obviously the crystallization zone for the molten crystal melt material is maintained at a temperature above the melting point for the crystal raw material and the annealing zone would be maintained below the melting point of the raw crystal material in order to operate

at desired functional purposes. Furthermore Garibin 057 teaches a succession of cooling rates beginning with the material maintained in the annealing zone at a holding temperature of 1100-1300⁰C for 20-40 hours then proceeding with a cooling rate less than 15⁰C/h, including the following sequence of 950-900⁰C at a rate of 2-4⁰C/hr and then further to a rate of 300⁰C at a rate of 5-8⁰C/hr and then thereafter the rest of the cooling being allowed to occur naturally. The translation rate of the crucible is at a speed of 1-3 mm/hr (Section 0015-0024). Lastly Garibin 057 teaches the technique being used for calcium fluoride structures (Section 0014).

However Garibin 057 fails to explicitly teach the limitation to occur for thermal gradient zone not to exceed the 5⁰C/cm value nor the 10⁰C/cm value. Instead Garibin 057 teaches a preferred 8-12⁰C/cm range which would encompass the 10⁰C/cm value range. As well Garibin 057 does not teach the specified limitation ranges of cooling as claimed in claims 12 and 13. As well Garibin 057 does not explicitly state that the method is utilized for other fluoride structures other than calcium fluoride. However there is evidence suggested in the background of the invention from cooling rates experimented as well temperature gradients to suggest that these limitations could be rendered obvious in lieu of the well known prior art and techniques utilized especially in noted Sections 0006-

0010 of Garibin 057's background of the invention, to understand these limitations would be figured via routine experimentation. There is no suggestion to say otherwise it would not be obvious to go from 8 to 5 degrees Celsius/cm considering the background discloses a $5^{\circ}\text{C}/\text{cm}$ parameter and not apply it to the thermally gradient region of the method. As well the background of the invention does state the teaching of this technique related to optical fluoride crystal structures which would encompass the gambit of other fluoride structures other than calcium fluoride crystal.

- 4) Claims 16 is rejected under 35 U.S.C. 103(a) as being obvious over Garibin (US PG Pub 2002/0185057) in view of Meyer-Fredholm (US Patent No. 6,669,778).

From the aforementioned Garibin 057 pertains to a process for growing optical fluoride monocrystals. However Garibin 057 did not teach the specific type of crucible used in the method. Examiner notes claim 16 is being objected too for failing to limit the method of claim 1, but in anticipation of the amended change, examiner puts forth the Meyer-Fredholm 778 reference which pertains to a process for fluoride crystal preparation utilizing the well known Stockbarger-Bridgman process. It teaches that it is well known to use a crucible or stack of crucibles

containing the molten material through the solidification zone (See Col 1 Lines 35-48).

Therefore it would be obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Garibin 057 with that of Meyer-Fredholm 778 to replace the crucible with a stack of crucibles since they are seen as substitution of equivalents in the method of making these optical fluoride crystals.

Information Disclosure Statement

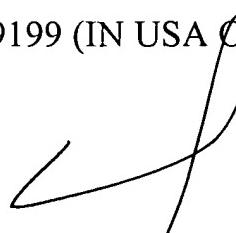
5) The information disclosure statement filed 3/25/04 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. References EP 1022362A2, EP1288348A2, and WO01/00908A1 were not received along with the other foreign and NPL documents submitted for consideration.

Art Unit: 1722

Any inquiry concerning this communication or earlier communications from the examiner should be directed to G. Nagesh Rao whose telephone number is (571) 272-2946. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on (571)272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



ROBERT KUNEMUND
PRIMARY EXAMINER

GNR